

CLAIMS

1. A steel product for induction hardening that consists of

C: 0.35-0.7 %,

Si: 0.30-1.1 %,

Mn: 0.2-2.0 %,

Al: 0.005-0.25 %,

Ti: 0.005-0.1 %,

Mo: 0.05-0.6 %,

B: 0.0003-0.006 %,

S: 0.06 % or less,

P: 0.02 % or less,

Cr: 0.2 % or less, by mass, and

a balance of Fe and inevitable impurities,

and has a structure of bainite and/or martensite, the total volume fraction of bainite and martensite being 10 % or more.

2. The steel product for induction hardening according to Claim 1, further comprising at least one selected from the group consisting of

Cu: 1.0 % or less,

Ni: 3.5 % or less,

Co: 1.0 % or less,

Nb: 0.1 % or less, and

V: 0.5 % or less, by mass.

3. An induction hardened member made of the steel product for induction hardening according to Claim 1, wherein the prior austenite grain size of a hardened layer formed on the surface of the steel product by induction hardening is 12 μm or less through the thickness of the hardened layer.

4. The induction hardened member according to Claim 3, wherein the thickness of a hardened layer formed on the surface of the steel product by induction hardening is 2 mm or more.

5. An induction hardened member made of the steel product for induction hardening according to Claim 2, wherein the prior austenite grain size of a hardened layer formed on the surface of the steel product by induction hardening is 12 μm or less through the thickness of the hardened layer.

6. The induction hardened member according to Claim 5, wherein the thickness of a hardened layer formed on the surface of the steel product by induction hardening is 2 mm or more.

7. A method for manufacturing a steel product for induction hardening, comprising the steps of:

hot working a steel consisting of the composition in Claim 1; and

cooling the hot worked steel at a cooling rate of at least 0.2 °C/s.

8. A method for manufacturing a steel product for induction hardening, comprising the steps of:

hot working a steel consisting of the composition in Claim 2; and

cooling the hot worked steel at a cooling rate of at least 0.2 °C/s.

9. A method for manufacturing an induction hardened member comprising the step of: subjecting the steel product for induction hardening manufactured by the method according to Claim 7 to induction hardening at least once, wherein the heating temperature of the final induction hardening is 800-1000 °C.

10. A method for manufacturing an induction hardened member comprising the step of: subjecting the steel product for induction hardening manufactured by the method according to Claim 8 to induction hardening at least once, wherein the heating temperature of the final induction

hardening is 800-1000 °C.

11. A method for manufacturing an induction hardened member comprising the step of: subjecting the steel product for induction hardening manufactured by the method according to Claim 7 to induction hardening at least once, wherein the heating temperature of all the induction hardenings is 800-1000 °C.

12. A method for manufacturing an induction hardened member comprising the step of subjecting the steel product for induction hardening manufactured by the method according to Claim 8 to induction hardening at least once, wherein the heating temperature of all the induction hardenings is 800-1000 °C.

13. The method for manufacturing an induction hardened member according to Claim 9, wherein the heating time of the final induction hardening is 5 seconds or less.

14. The method for manufacturing an induction hardened member according to Claim 10, wherein the heating time of the final induction hardening is 5 seconds or less.

15. The method for manufacturing an induction hardened member according to Claim 11, wherein the heating time of

all the induction hardenings is 5 seconds or less.

16. The method for manufacturing an induction hardened member according to Claim 12, wherein the heating time of all the induction hardenings is 5 seconds or less.

17. The method for manufacturing an induction hardened member according to Claim 9, wherein the thickness of a hardened layer formed on the surface of the steel product by induction hardening is 2 mm or more.

18. The method for manufacturing an induction hardening member according to Claim 10, wherein the thickness of a hardened layer formed on the surface of the steel product by induction hardening is 2 mm or more.

19. The method for manufacturing an induction hardening member according to Claim 11, wherein the thickness of a hardened layer formed on the surface of the steel product by induction hardening is 2 mm or more.

20. The method for manufacturing an induction hardening member according to Claim 12, wherein the thickness of a hardened layer formed on the surface of the steel product by induction hardening is 2 mm or more.